

Applicant: Hannu Pullinen et al.
Application No.: 10/534,445
Response to Office action dated May 10, 2007
Response filed August 8, 2007

In the specification

Please add the following new paragraph after ¶ [0011]

[0011a] FIG. 2 is an isometric view of a guide roll of the multiple-nip calender of FIG. 1 comprising a plurality of short successive roll sections having identical diameters.

Please amend ¶ [0013] as follows:

[0013] The set of rolls 2 of the multiple-nip calender 1 of FIG. 1 comprises six rolls. The outside of the set of rolls is located on the left of the central line L of the set of rolls, whereas the inside of the set of rolls is located on the right side. Consequently, the fibre web enters the set of rolls from the inside of the set of rolls and leaves the set of rolls to the outside. Both the uppermost and the lowermost roll 4;4' and 4;4" are equipped with hydraulic loading means within the roll for control of the nip pressure in the set of rolls and also for control of the nip pressure profile. Idle rolls 5, i.e. rolls 5;5', 5;5", 5;5"', and 5;5"" are alternately water-heated steel rolls with a hard surface and polymer-coated rolls. Polymer-coated rolls are thus rolls 4;4', 5;5", 5;5"', and 4;4", and steel rolls are rolls 5;5' and 5;5"". The ends of the idle rolls 5 comprise hydraulic roll crown variation means, which serve for completely or partly compensating roll crowning caused by the inherent roll mass and by the auxiliary means at the roll ends, in order to maintain the desired nip pressure profile of the multiple-nip calender. The crown variation means have a design that is conventional *per se*, such means being described e.g. in "*Wochenblatt für Papierfabrikation, Heft 23/24 1997*" and in other literature in the field. The set of rolls 2 exemplified in the figure comprises five roll nips N, of which the

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central nip N;N3 is a "reversing nip" for control of a single-sided fibre web. The idle rolls 5;5" and 5;5'" on different sides of the reversing nip are both polymer rolls. The line L of the set of rolls, i.e. the line L passing through the central point of the rolls in the set of rolls, is in a substantially vertical position. The roll nips N;N2, N;N4 and N;N5 are preceded by output/spreading rolls 6 in the calender, these rolls serving to spread the fibre web and to act on the period over which the heat of the thermo-roll acts on the fibre web before the fibre web reaches the following roll nip. In addition, these output/spreading rolls are used for removing folds on the fibre web. The spreading/output rolls 6 also equalize the distance between two successive roll nips over which the fibre web W travels in the machine cross-direction. The output roll located before the reversing nip N;N3 has been replaced with a roll means 3. In this roll means 3, the same frame 31 comprises attached fibre web damping unit 33 and guide rolls 32 steering the fibre web relative to the damping unit. The guide rolls 32 have a diameter notably smaller than that of the spreader rolls 6. Each guide roll 32 consists of "sectional rolls", which are formed by short successive guide rolls 2 mounted in the same frame and having identical diameters. The guide rolls 32 are disposed relative to the damping unit 33 so that the surface of the fibre web W passes in the vicinity of the frontal face 33a of the damping unit, the water jets being fed through this frontal face. The damping unit 33 may have a design that is conventional *per se*, such as a design with two nozzle rows on the frontal face of the damping unit, each nozzle row comprising a plurality of small nozzles. Small water droplets are conducted through the nozzles so as to moisten the fibre web surface passing in the vicinity of the frontal face. For a more detailed description of the design of the damping units, we refer to prior art and to Metso Paper, Inc.'s damping unit of the range VIBAir Tech TM, for instance.